S.E sem-III CBN M-2014

Sub- ECCF . COMP

22/5/14

QP Code : NP-18652

(3 Hours) **[Total Marks : 80**

N. B. : (1) Questions **No. 1** is compulsory.
(2) Solve **any three** questions out of remaining questions.
(3) Draw neat and clean diagrams.
(4) **Assume** any suitable **data** if required.

1. (a) Explain input offset voltage, CMRR and SVRR for operational amplifier. **5**
(b) Explain Barkhausen's criteria for principle of oscillation. **5**
(c) Explain principle of FDM. **5**
(d) Compare FM and AM. **5**

2. (a) Sketch a typical drain characteristics for $V_{GS} = 0$ for an n-channel JEFET. Explain the shape of the characteristics, identify regions and indicate the important current and voltage levels. **10**
(b) Explain class C BJT power amplifier in detail. Compare it with class A BJT power amplifier. **10**

3. (a) Explain amplitude modulation for more than one modulating signal in following cases **10**
(i) Mathematical equation
(ii) AM waveform
(iii) Am amplitude and power spectrum
(iv) Modulation coefficient
(v) Transmission power
(b) Explain with block diagram AM superheterodyne receiver. **10**

4. (a) Explain ideal as well as practical differentiator wing operational amplifier in detail. **10**
(b) The antenna current of an AM broadcast transmitter, modulated to a depth of 40% by an audio sine wave is 11 A. It increases to 12 A as result of simultaneous modulation by another audio sine wave. What is the modulation index due to this second wave? **10**

5. (a) State sampling theorem. What happens if the sampling is done at less than $2f_{max}$. **10**
(b) What is multiplexing in communication system? Draw black diagram of TDM-PCM System and explain?. **10**

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6. (a) Explain PLL as a frequency synthesizer. 5
   (b) Explain operating principle of PLL. 5
   (c) List different types of ADC's and explain binary weighted ADC in detail. 10

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